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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/632,011

07/31/2003

Francesc Subirada

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EXAMINER

PHAM, HAI CHI

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 07/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/632,011

Applicant(s)

SUBIRADA ET AL.

Examiner

Hai C. Pham

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 7-13 and 15-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maza et al. (U.S. 6,164,753) in view of Wickham et al. (U.S. 6,419,340).

Maza et al. discloses a method of calibrating an optical sensor (17) of a color image forming device, said image forming device including a traversing carriage (printer carriage 10) supporting said optical sensor and a plurality of different color ink print heads (18) (Fig. 3), the traversing carriage movable over a print area during normal printing operations and over a service area of the image forming device for service operations, the method comprising positioning a prefabricated optical sensor target (formed by the insert 70 and the mount 71) at the service area of the image forming device, the target including a plurality of target patches of predetermined different colors (the insert section 70 defines a rectangular reference mark 76 defining a black pattern of the mount 71 surrounded by the white bands of the insert section 70) (col. 7, lines 1-20), moving the carriage to the service area of the image forming device (the optical sensor 17 scanning past the reference mark 76 provided by the insert section 70), acquiring one or more images of said plurality of target patches (Figs 15A-B), using the

one or more images to perform a calibration of the optical sensor (e.g., determination of the operation of optical sensor 17 in correctly reading the test pattern) (col. 7, lines 47-48).

With regard to claim 14, Maza et al. further teaches moving the carriage to the service area (the optical sensor 17 scanning past the reference mark 76 provided by the insert section 70), generating a light beam from a carriage-mounted light source (LEDs 428, 430) at a position adjacent an end of the sensor (photocell 420), the light beam at an acute angle relative to an array axis (Fig. 12), reflecting the beam from a reference target mounted in the service area at a known position, acquiring an image of the reflected beam by the sensor (Figs. 15A-B), and using the location of a high intensity area of the image to determine said reference position of the optical sensor (the determination of the position of the optical sensor relative to the service station is based on the determination of the location of the transition from the low intensity area to the high intensity area as the optical sensor scans past the black pattern target member to the white target member).

However, Maza et al. fails to teach performing more than one type of calibrations of the optical sensor (claim 1), the calibration including sensor pixel response uniformity and dynamic range (claim 2), sensor color calibration (claim 3), and the sensor being a sensor array (claim 14).

Wickham et al. discloses an image forming apparatus comprising a plurality of cartridges that emit a variety of colored ink droplets, an optical sensor in the form of a sensor array (CCD 100) used for creating an ink color transforms to enable optimized

printing operations, wherein a plurality of calibrations of the sensor array are initially performed to (a) ensure that the sensor array is operating effectively, (b) determine and/or confirm the operational range of the sensor array by reading the adjacent black and white patterns, and (c) deriving the ratio of the CCD array pixels to each printer pixel (col. 10, line 41 to col. 11, line 47). Wickham et al. further teaches using the sensor array to perform color calibration by building a color transform from a plurality of color patches so as to apply said color transform to a digital image data stream during the printing operations.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Maza et al. to incorporate the various calibration types as taught by Wickham et al. The motivation for doing so would have been to allow the optical sensor to perform a high calibration process so as to enable optimized printing operations as suggested by Wickham et al.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maza et al. in view of Wickham et al., as applied to claim 1 above, and further in view of Sievert et al. (U.S. 5,796,414).

Maza et al., as modified by Wickham et al., discloses all the basic limitations of the claimed invention except for the target including a plurality of spaced fiducial marks, and said plurality of calibrations including determining an angular position of the target relative to the sensor.

Sievert et al. discloses a method for determining a positional deviation of the print heads by scanning the sensor across a test pattern having diagonal stripes whose angular orientation relative the scanning direction of the sensor allow to determine the misregistration of the print heads in both main and sub-scanning directions.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the target pattern in the modified device of Maza et al. as diagonal stripes as taught by Sievert et al. for the purpose of determining the positional deviation of the print heads in both main and sub-scanning directions.

4. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maza et al. in view of Wickham et al., as applied to claim 1 above, and further in view of Scheuer (U.S. 6,385,408).

Maza et al., as modified by Wickham et al., discloses all the basic limitations of the claimed invention except for the strips having a longitudinal extent at least as long as the sensor field of view.

Scheuer discloses an optical sensor for controlling the various system parameters of the image printing system, wherein the test patch (140) is formed such that its longitudinal side is at least as long as the sensor field of view (138) (Fig. 6) such that the optical sensor can accurately detect the information contained in the test patch by fully locating the test patch.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to arrange the sensor field of view relative to the size of

Art Unit: 2861

the target member of the device of Maza et al. as taught by Scheuer. The motivation for doing so would have been to allow the optical sensor to accurately detect the information contained in the test patch by fully locating the test patch as suggested by Scheuer at col. 6, lines 7-27.

Response to Arguments

5. Applicant's arguments with respect to claims 1-6 and 14 have been considered but are moot in view of the new grounds of rejection as presented in this Office action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (571) 272-1934. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2861

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



HAI PHAM
PRIMARY EXAMINER

July 5, 2005